

Table 2: Satellite Systems' Shares of Capacity in Transoceanic Services, Current and Projected End 1998²

	Current	End 1998
Atlantic		
INTELSAT	54.8%	54.8%
PanAmSat	31.4%	32.8%
Telecom	7.4%	6.6%
Orion	3.0%	2.7%
Intersputnik	1.5%	1.3%
Hispasat	1.2%	1.1%
Columbia	0.8%	0.7%
Indian		
INTELSAT	74.4%	71.0%
PanAmSat	7.8%	14.0%
Asiasat	10.3%	9.9%
Intersputnik	7.5%	5.0%
Pacific		
INTELSAT	78.6%	68.4%
PanAmSat	15.5%	26.5%
Intersputnik	3.7%	3.2%
Columbia	2.2%	1.9%

Competition from independent satellite systems is stronger in full-time video than in occasional. PanAmSat, for example, the largest independent system, has primarily provided full-time video services.⁴³ PanAmSat currently provides full time video services in over 128 countries, occasional

⁴² Systems providing transoceanic service are identified in GAO, op. cit., p. 43. Shares are based on megahertz. All transponders on a satellite providing service across an ocean are included, even if the transponder is not used in video service. The available data do not allow the differentiation of capacity by the service it is used in. Some satellites are included in the data for more than one ocean service. Estimates of capacity were developed by PanAmSat based on International Satellite Directory, The Satellite Encyclopedia On-line, Satcodx on-line, Lexis-Nexis on-line, and other industry publications

⁴³ "Comments of Capital Cities/ABC, Inc., CBS Inc., National Broadcasting Company, Inc. and Turner Broadcasting System, Inc.," Before the Federal Communications Commission In the Matter of Comsat Corporation, op. cit., p. 16.

transmit-receive services in only 48.⁴⁴ The concentration on full-time services may reflect the difficulty of getting landing rights from PTTs in many INTELSAT member countries. Full-time video requires much less infrastructure in the country served. Often the satellite need only communicate with a single earth station in the country, or the communication may be receive only, with no requirement to send messages from the country up to the satellite. Occasional services require extensive landing rights. Because the location of news events is unpredictable, the users of these services must be able to broadcast to the satellite from a large number of points within a country.

INTELSAT has market power in markets for occasional video services that require transmissions across the Atlantic, Indian, or Pacific Oceans.⁴⁵ The major customers for these services state that competition is not effective for transoceanic occasional services.⁴⁶ The GAO and Department of Justice Antitrust Division also find that INTELSAT has market power in segments of the video market. Moreover, a recent FCC order found that INTELSAT had market power in occasional video.⁴⁷ This market power stems not only from INTELSAT's large share of the capacity that is and could be used in this service, but also from legal barriers to entry that its signatories have erected to prevent its competitors from getting the landing rights needed to compete.

Although independent satellite systems are more competitive in the markets for full-time services, these markets are often highly concentrated, with INTELSAT having a large share. Estimates of the INTELSAT U.S. signatory's share of video transmissions are 53% for transatlantic service and

⁴⁴ PanAmSat also provides receive only occasional use video services in 31 countries; these services are generally much less valuable than transmit-receive. See information submitted by PanAmSat in response to a request of the FCC, letter from Henry Goldberg to Regina Keeney, February 6, 1998, op. cit.

⁴⁵ Regional satellite systems may offer competition in other occasional video markets, such as markets involving transmissions between the United States and Mexico.

⁴⁶ "Comments of Capital Cities/ABC, Inc., CBS Inc., National Broadcasting Company, Inc. and Turner Broadcasting System, Inc.," Before the Federal Communications Commission In the Matter of Comsat Corporation, op. cit., p.12.

⁴⁷ Federal Communications Commission, August, 14, 1997, op. cit., p. 15.

44% for transpacific service.⁴⁸ Moreover, even ignoring difficulties in getting landing rights, barriers to entry are high in these markets. Entering these markets requires the enormous capital investment involved in acquiring and launching a satellite, an investment that involves a large degree of sunk cost. Although entry has taken place in these markets, in response to the large growth in demand for these services in recent years, entry cannot be counted on to deter anticompetitive conduct in these markets in the future.

V. INTELSAT should be privatized as several entities without significant PTT ownership.

Presently there is much discussion about INTELSAT privatization. INTELSAT itself is considering a plan that purportedly would achieve partial privatization. This plan would place some of its capacity in a private company, called INTELSAT New Company (INC). Whether INC would truly be a private company is questionable, however, as much of it could be owned by state-controlled INTELSAT signatories. Under the proposal of the INTELSAT Working Party, initially INTELSAT would own 10 percent of INC, and INTELSAT signatories would own the rest, although these shares could be diluted by a subsequent public offering.⁴⁹ The Clinton Administration favors privatization, which is also the goal of a bill in Congress. Still to be determined is how INTELSAT is to be privatized. INTELSAT could remain one entity or be divided into several pieces. PTTs could continue to own a large part of the resulting entity or entities, or PTT ownership could be restricted.

In considering whether or not to divide INTELSAT into several entities, the standard for breaking up INTELSAT should not be the same as for breaking up a monopoly under Section 2 of the Sherman Act. In a Sherman 2 case, because the monopoly under attack usually has arisen in large part due to market forces, there is reason to take seriously any claims of

⁴⁸ Federal Communications Commission, August 14, 1997, op. cit., p. 10.

⁴⁹ INC would own five current INTELSAT satellites and one satellite to be launched. It would focus on direct to home video distribution and interactive multimedia services. INTELSAT press release, "International Agreement Reached on Report On Restructuring of INTELSAT," February 12, 1998.

economies of scale. INTELSAT, however, exists due to governmental decisions; it has no claim to have passed a market test. Moreover, in a Sherman 2 case, the alternative to break-up is to leave a well-functioning entity alone. Here the alternative to break-up is a different type of restructuring, since in either case INTELSAT will be privatized. As a result, most of transaction costs of privatization are likely to be incurred whether or not INTELSAT is disaggregated into multiple entities.

If the standard is whether a sale into several entities, rather than one, will significantly increase competition, then a strong case can be made for breaking up INTELSAT. INTELSAT has almost no effective competition in many markets. These markets include those for telephony to satellite dependent countries, and those for transoceanic occasional video. Moreover, it has a very high share in other markets, highly concentrated markets with significant barriers to entry.

Indeed, were INTELSAT now already two or more entities, it is very unlikely that those entities would be allowed to combine under U.S. antitrust laws. Even if one considers only the markets for full-time video, markets where INTELSAT faces relatively more competition, such a combination would probably result in concentration well above the levels at which the U.S. antitrust authorities typically challenge an acquisition.⁵⁰ Certainly a merger that resulted in no effective competition in certain telephony and occasional video markets would be viewed as violating the antitrust law.

The fact that competition to INTELSAT has been increasing does not alter this conclusion. Whether and when increasing competition will eliminate INTELSAT's market power remain matters of speculation. For example, although proposed new cable systems, such as Africa One, may someday bring fiber optic service to some of the satellite dependent countries it will by no means reach all of them. Moreover, although several new communication satellite ventures are proposed, and existing satellite companies plan to expand their number of orbiting satellites, the completion

⁵⁰ Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, April 2, 1992, op. cit.

dates of the proposed satellite projects, like that of Africa One, remain speculative.⁵¹ Finally, many of the planned satellites will provide new services enabled by advanced technologies and will not compete in many of the markets served by INTELSAT. Thus, the anticompetitive effects of allowing INTELSAT to remain as a single entity are likely to persist for many years.

Dividing INTELSAT into several entities is unlikely to result any systems that are below minimum efficient scale. Satellite systems apparently exhaust all significant economies of scale at the size of 7 or 8 satellites.⁵² INTELSAT has 24 satellites and reservations on a large number of orbital slots. Thus, all significant economies of scale could be preserved if INTELSAT were divided into three entities.

The other question concerning the privatization of INTELSAT is whether the monopoly PTTs that control market access should be allowed to keep a substantial ownership share. PTTs have long acted to foreclose markets from competing satellite systems. Leaving them as substantial owners of INTELSAT would invite them to continue that behavior. Furthermore, while independent satellite systems can be expected to promote the spread of competition and improved market access for U.S. firms, an international satellite system that was largely owned by PTTs almost surely would not. Thus, if PTTs own a large share of INTELSAT's successor, it would eliminate the opportunity to create an entity that would work for increased competition. Moreover, there is no evidence that allowing PTT ownership of INTELSAT would result in any significant efficiencies. Allowing PTTs that control access to their national telecommunication markets to own

⁵¹ For example, construction has yet to begin on Africa One, even though it once was planned to begin in 1996. "ITU to be Actively Involved in the Development of Africa One," *M2 Presswire*, January 3, 1996; and "Green Light for Africa One," *M2 Presswire*, October 15, 1997.

⁵² GAO, "Competitive Impact of Restructuring the International Satellite Organizations," GAO/RCED-96-204, Washington, D. C., July 1996, p. 10; and D. Neven, L. Roller, and L. Waverman, "Sunk in Space: the Economics of the European Satellite Industry and Prospects for Liberalization," *Economic Policy*, October 1993, pp. 402-432.

a significant share of the successor to INTELSAT risks significant competitive harm and offers no offsetting benefits.

VI. Conclusion

Although INTELSAT has seen increasing competition, it still has significant power in many markets. INTELSAT and its signatories have often acted to foreclose markets and deter entry by independent satellite systems. Thus, a privatization of INTELSAT into three entities that are independent of PTTs would be preferable to alternative forms of privatization. There is no evidence that such a privatization is not feasible or would entail costs significantly greater than allowing INTELSAT to remain a single entity largely owned by PTTs. Creating three independent entities from INTELSAT would increase competition in highly concentrated markets. Moreover, it would eliminate conditions that led to significant market foreclosure and create a situation more conducive to U.S. efforts to expand access to foreign telecommunication markets.

Appendix: Satellite Dependent Countries

Table A-1: Satellite Dependent Countries

Country*	Signatory	% privatized	Investment Share	Total US Carrier Retained Revenue	WTO Member	Intelsat Member	GBT Commitment	Satellite Services Access	Waiting Time (years) 1995**
Angola	Empresa Publica de Telec.	0%	0.24%	\$2,016,239	yes	yes			n/a
Benin	Office des Postes et Telec.	0%	0.06%	\$760,591	yes	yes			1.3
Bolivia	Entel	50%	0.26%	\$13,037,779	yes	yes	yes	Full - 2001	1
Bosnia & Herzegovina	Public Enterprise PTT	0%	0.05%	\$21,357,607		yes			n/a
Botswana	Botswana Telec. Corp.	0%	0.05%	\$1,152,104	yes	yes			1.5
Burkina Faso	Office des Postes et Telec.	0%	0.05%	\$850,044	yes	yes			n/a
Cameroon	Intelcam	0%	0.12%	\$3,310,655	yes	yes			>10
Cape Verde	CTT	40%	0.05%	\$2,915,173		yes			3.3
Central African Republic	Government of CAR (Carcatel)	43%	0.05%	\$347,962	yes	yes			1
Chad	Societe des Telec.	0%	0.05%	\$33,565	yes	yes			9.2
Congo	ONPT	0%	0.15%	\$1,356,805	yes	yes			0.6
Costa Rica†	Instituto Costarricense de Electricidad	0%	0.05%	\$36,257,797	yes	yes			0.8
Cote d'Ivoire	Agence de Telec.	30%	0.20%	\$7,572,265	yes	yes	yes	Partial	5.6
Ethiopia	Ethiopian Telec. Corp.	0%	0.17%	\$9,611,563		yes			>10
Gabon	TIG	0%	0.06%	\$1,047,517	yes	yes			2.4
Ghana	Ghana Telec.	30%	0.12%	\$20,224,054	yes	yes	yes	Partial	7
Guinea	Ministere des Postes et Telec.	60%	0.06%	\$4,219,782	yes	yes			>10
Iraq	Government	0%	0.21%	\$3,037,028		yes			n/a
Jordan	Government of Jordan	0%	0.20%	\$11,057,471		yes			9.9
Kenya	Kenya Posts and Telec.	0%	0.32%	\$12,469,422	yes	yes			6.6
Libya	Government of Libya	0%	0.15%	\$352,462		yes			8.5
Malawi	Department of Posts and Telec.	0%	0.06%	\$1,021,598	yes	yes			>10
Mali	Sotelma	0%	0.07%	\$3,529,550	yes	yes			n/a
Malta	Telemalta Corp.	0%	0.08%	\$2,637,027	yes	yes			0.3
Mauritania	Government of Mauritania	0%	0.05%	\$354,131	yes	yes			1.8
Mauritius	Mauritius Telecom	19%	0.13%	\$580,009	yes	yes	yes	Full - 2004	2
Micronesia	Government of M.	0%	0.05%	\$3,376,346		yes			0.2
Namibia	Telecom Namibia	0%	0.05%	\$276,087	yes	yes			1.3
Nicaragua	Telcor - signatory		0.05%	\$23,548,264	yes	yes			n/a
	Enitel, S.A. - international long distance and satellite monopoly	0%	0.00%						
	Total Country		0.05%						
Niger	Government of Niger	0%	0.07%	\$591,902	yes	yes			1.4
Oman	Sultanate of Oman	0%	0.26%	\$2,408,373		yes			0.2
Paraguay	Conatel - signatory		0.20%	\$5,650,400	yes	yes			0.8 est

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Country*	Signatory	% privatized	Investment Share	Total US Carrier Retained Revenue	WTO Member	Intelsat Member	GBT Commitment	Satellite Services Access	Waiting Time (years) 1995**
	Antelco - long distance monopoly provider	0%	0.00%						
	Total Country		0.20%						
Qatar	Q-Tel	0%	0.20%	\$3,972,723	yes	yes			0.1
Rwanda	Ministry of Telec.	0%	0.05%	\$1,661,148	yes	yes			4.6
Somalia	Ministry of Posts and Telec.	0%	0.05%	\$1,150,714		yes			n/a
Sudan	Government of the Rep.	0%	0.10%	\$2,637,537		yes			>10
Swaziland	Posts and Telec.	0%	0.05%	\$366,162	yes	yes			8.4
Tanzania	Tanzania Telec. Co.	0%	0.10%	\$1,563,457	yes	yes			>10
Togo	Togo Telecom	0%	0.12%	\$1,290,726	yes	yes			2.5
Uganda	Ministry of Power, Post and Telec.	0%	0.06%	\$2,867,509	yes	yes			1.1
Zambia	Government of Zambia	0%	0.12%	\$1,462,812	yes	yes			>10

* Satellite dependent countries that are not Intelsat signatories are not listed.

**Time a customer must wait to receive phone service. Figures in italics are ITU estimates.

† Costa Rica and Guatemala plan to install submarine cable.

Source: FCC (US Carrier Retained Revenue), Intelsat (Investment Share), ITU, Office of the Trade Representative, PanAmSat, and Pioneer Consulting (Identification of Satellite Dependent Countries).

COMPETITION IN INTERNATIONAL SATELLITE SERVICES:

REPLY TO PROFESSOR MARIUS SCHWARTZ

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1. Executive Summary

Only two years ago the Council of Economic Advisors concluded that Intelsat and Intelsat's proposed restructuring posed numerous competitive risks. One of the authors of that study, now working for Comsat, Professor Marius Schwartz has refuted the conclusions of the CEA study and now believes that Intelsat is and has been a benign cost-minimizing co-operative.

Professor Schwartz greatly understates Intelsat's market power or, the other side of the coin, overstates the strength of the competitive constraints on Intelsat and on its Signatories. Professor Schwartz wrongly concludes, based on a simplistic theory that ignores all strategic interactions between Intelsat and its Signatories and other competitors, that Intelsat and its Signatories have no incentive to restrict entry and competition. Professor Schwartz would have us believe that government-owned PTTs operate in an extreme world of perfect profit maximization, that their incentives are to cost minimize, and that the managers of these state-owned enterprises would use a competitor in order to save money; an odd description indeed of the typical PTT. In fact, as Professor Schwartz noted in his 1995 CEA paper, access to foreign markets through PTTs remains a significant barrier to competition in this market.

In this paper, I use four empirical tests to examine Professor Schwartz's hypothesis that INTELSAT is purely a cost minimizing co-operative.

- ☐ does Intelsat's margin (revenue minus operating costs) change over time, as would be indicated in a competitive market ?
- ☐ do Signatories use of INTELSAT change over time, as it would in a competitive market?
- ☐ do Signatories' uses of Intelsat vary as competitive facilities roll-out?
- ☐ does Comsat's market value reflect market power

In answering these questions, I examined the data on the spread of competitive facilities and the data on Intelsat investment shares which themselves are countries' use of Intelsat to examine Professor Schwartz's hypothesis that Intelsat is a cost sharing co-operative. Labels do not make good economics, what are the facts?

FACT 1

The Intelsat operating margin is essentially flat between 1974 and 1996, it does not fall in recent years and is not changing over time as one would expect competitive conditions to impact margins.

FACT 2

Countries' investment shares in Intelsat are surprisingly constant. Professor Schwartz's theory would predict that countries usage of Intelsat would constantly reflect competitive factors and thus these shares should ebb and flow, they do not.

FACT 3

For 74 nations, I estimated a statistical relationship between the countrys' Intelsat investment and certain country characteristics including the presence of cable facilities and the spread of all competing satellite facilities. The spread of these satellite facilities, contrary to Professor Schwartz's theory, does not affect the use of Intelsat facilities.

FACT 4

Comsat is a publicly traded company. If Professor Schwartz's view is correct, PanAmSat's launch of facilities would reduce Comsat's market value since these new facilities could be used in place of Intelsat. The data from 1988 to 1996 however show that Comsat's market value is largely independent of PanAmSat's entry or expansion.

Two other crucial facts are missing in the Schwartz analysis - the high price-cost margin of signatories (*i.e.*, their mark-up over the Intelsat wholesale rate) and the fact that governments and signatories are one and the same in many countries. All these facts together point to a conclusion that is also supported by correct economic theory: Intelsat continues to pose competitive concerns and any restructuring has to be carefully constructed to eliminate these concerns.

2. This study

Professor Schwartz's study, *Competition in International Satellite Services: Whither Intelsat Restructuring*,¹ appears to be written in response to my two submissions in this proceeding. My studies were prepared on behalf of PanAmSat and demonstrated that the Brattle Group analysis in support of Comsat's petition for treatment as a non-dominant carrier was deficient and did not accurately reflect the realities of the international satellite marketplace. Now, in a startling change from a position expressed only two years ago when he served on the staff of the Council of Economic Advisors, Professor Schwartz has been enlisted in Comsat's effort to argue against my studies. I find his changed view, his arguments in support of it, and particularly his lack of citation to any change in the factual premises of the problem, totally unpersuasive.

In brief, Professor Schwartz contends that market access for private satellite systems is completely unaffected by Intelsat, that opportunities and allegations of collusion between Intelsat and its signatories have been exaggerated and, at present, do not exist. Accordingly, he concludes that competition is sufficiently burgeoning so that restrictions on Intelsat's restructuring to foster competition would be unnecessary and counterproductive. Professor Schwartz's analysis is flawed both on a theoretical basis and a factual basis. Professor Schwartz adds neither to the economic analysis of, nor the empirical evidence relating to, the competitive importance of Intelsat and its Signatories, including Comsat. In particular, Professor Schwartz offers no reason to lower competitive concerns regarding the expansion of Intelsat into new businesses, including its establishment of a new, subsidiary (INC). Contrary to the views that Professor Schwartz is now expressing, Intelsat expansion and restructuring are significant concerns for competition and for telecommunications policy.

In the discussion that follows, I examine Professor Schwartz's stated basis for his change in position and the major premise of his study for Comsat, which is that Intelsat merely is a cost-sharing cooperative that offers no threat either to market openings among its member countries or to competition generally in international satellite services.

¹ Marius Schwartz, *Competition in International Satellite Services: Whither Intelsat Restructuring?*, November 19, 1997; Public Notice, SPB-113 (Jan. 7, 1998) (Schwartz).

3. Professor Schwartz's Position on Intelsat Restructuring Has Changed Substantially, Without Apparent Basis.

Professor Schwartz concluded in 1995, while at the Council of Economic Advisers, that there are competitive risks posed by all of the proposals for Intelsat reorganization, including the establishment of subsidiaries, because:

*"Restructuring proposals...raise the fundamental question of whether it is appropriate for an entity such as INTELSAT, with its close links to national governments, to expand into new services outside its core mission. Indeed, perhaps the reverse is true; perhaps INTELSAT should shrink rather than expand its size and scope of activities. all [such proposals] raise the specter of cross-subsidization of new services, or of technological discrimination against competitors."*²

Professor Schwartz based this conclusion on the following reasoning, with which I continue to agree, even if he does not: permitting an entity like INTELSAT to expand into potentially competitive services, whether directly or through close affiliates, can create a number of distortions. The precise scope and quantitative importance of these distortions will vary across countries, but the potential inefficiencies may be large and depend, inter alia, on the details of the particular regulatory regimes.³

Professor Schwartz saw the competitive concerns raised by Intelsat restructuring as stemming largely from barriers to competition, and to the entry and expansion of competing carriers, as a result of Intelsat's special privileges and its relationships with the national telecommunications monopolies in many countries:

*"The main barriers now to expansion of private providers seem to be artificial barriers. These stem largely from the special status enjoyed by INTELSAT and include: its ownership of scarce geostationary (GEO) slots, its tax preferences and immunities from competition laws, and, probably most important, the restriction of access to national markets imposed on INTELSAT's potential competitors by governments or their telecommunications monopolists."*⁴

²Joseph E. Stiglitz, Marius Schwartz, and Eric D. Wolff, Towards Competition in International Satellite Services: Rethinking the Role of INTELSAT, DRAFT July 1995, Council of Economic Advisers. (CEA)

³ CEA, page 7.

⁴ CEA, page 1.

In reaching this conclusion, Professor Schwartz noted the potential for Intelsat to use its bottleneck position strategically to disadvantage its rivals. For example, he described one mechanism of such anticompetitive strategy as follows:

*"But entrants must coordinate their positioning and operations with incumbents to avoid interference. INTELSAT's widespread presence gives it the potential ability to delay entry by dragging its feet in negotiations and, perhaps more importantly, the negotiations over "coordination" might give it insights into competitors business plans."*⁵

Professor Schwartz states the following reasons for his change in position:

*"While these qualitative concerns [e.g., discrimination, foreclosure, and cross-subsidization] remain valid, evidence now available suggests that their importance may have been overstated even at the time and, more importantly, that restrictions on INTELSAT/INC are far less justified today. Key developments have taken place since that paper was written: (1) The successful conclusion in February 1997 to the WTO negotiations on telecom services showed that market access barriers can be targeted directly. (2) The 1996 federal court opinion helped expose the lack of evidence behind allegations against INTELSAT Signatories of anti-competitive conduct. (3) Compelling new evidence has emerged that private satellite systems are quite capable of competing successfully against INTELSAT."*⁶

I do not believe these reasons are either adequate or compelling. If anything is overstated, it is the combined competitive effect of the three key developments upon which Professor Schwartz bases his present view of Intelsat restructuring.

With regard to the WTO agreement and its impact on market barriers, there can be no assurance that market liberalization will in fact occur, either on the pace or to the degree contemplated in the various countries commitments. In addition, market access depends on the degree and extent to which the principles laid out in the WTO *Reference Paper* are implemented, an uncertain process, at best, if liberalization in the US is any guide. To rely on the WTO agreements to resolve market access problems, therefore, is to take an excessively optimistic and long-term view.

⁵ CEA, page 4.

⁶ Schwartz, 1997, p. 12, note 6. It is not clear what Professor Schwartz means when he writes that the evidence now available suggests that their (potential anticompetitive barriers and effects) importance may have been overstated even at the time. One interpretation is that he is saying that the previous paper was based on insufficient research; another is that, in his view, the previous paper included faulty analysis. I do not know whether the papers two other authors would agree with either of these assessments.

Moreover, however long the view, Professor Schwartz's own prior writings indicate that potential, as opposed to actual, competition alone may not be sufficient to maintain competitive discipline in a market.⁷ Indeed, as recently as March, 1996, in writing for the Department of Justice on the entry of the RBOCs into interstate telephony, Professor Schwartz did not seem to feel that imminent or potential competition was sufficient to justify the risks of monopoly entry into competitive sectors:

*"Local telephone competition is just around the corner. A rhetorical response is that if competition really is so imminent, why don't we wait a few months until it arrives? More to the point, in evaluating the state of competition, it is important to distinguish between various local network services. Competition has been growing in limited services to certain customers."*⁸

I believe, with Professor Schwartz as quoted above, actual competition, rather than mere potential competition, is of particular importance in disciplining a market, especially a market subject to potentially anticompetitive behavior by firms that control bottleneck facilities. By way of analogy, although competitive satellite systems have made in-roads in providing some services to some customers, the Intelsat share of international traffic interconnected to the PSTN has been and remains high. It is access to the PSTN, after all, that the PTTs most directly control.

Concerning Professor Schwartz's reliance on the dismissal of the PanAmSat antitrust complaint as a reason for changing his position, I believe that he gives altogether too much weight to the findings in that case, given that PanAmSat was not permitted to introduce into evidence the Intelsat Signatories' boycott resolution because of Intelsat's and Comsat's immunity from suit.⁹

I turn now to the third purported reason for his abrupt change in position the so-called compelling new evidence that separate satellite systems and fiber optic cables exercise competitive constraints on Intelsat.

⁷ Schwartz, Marius, *The Nature and Scope of Contestability Theory*, *Oxford Economic Papers*, vol. 38 Supplement, November 1986, 37-57.

⁸ "Telecommunications Reform in the United States: Promises and Pitfalls", page 29.

⁹ The appellate court that upheld the district courts dismissal of the PanAmSat complaint stated that COMSAT's activities in connection with a so-called "boycott resolution," adopted and reaffirmed at meetings of Intelsat, were immune from discovery and could not be considered as evidence to support PAS's antitrust claims.

4. Professor Schwartz Overstates the Strength of the Competitive Constraints on Intelsat

Professor Schwartz incorrectly infers strong competitive constraints from the existence and expansion of cable and separate satellite systems. He states that the totality of Intelsat's alleged advantages have not discouraged already significant growth of competitors.¹⁰ His conclusion that Intelsat's advantages are not important because some entry has occurred is, however, a *non-sequitur*. A firm with market power may maximize profits by setting prices above cost that allow entry. The exercise of market power by Intelsat (and the Signatories) would induce expansion of cable and separate satellite systems, especially if Professor Schwartz's premise of strong substitutability between facilities is correct. With strong but not tightly constraining substitutability, expansion of substitutes can indicate power, not constraint. That is the expansion of rivals may simply indicate that a high price strategy is best for the incumbent and this high price induces entry. This is the well-known Cellophane Fallacy, in antitrust economics (named after the case where it first came to prominence) whereby competition that is induced by the exercise of market power is wrongly taken to indicate a broad relevant market or constraints on market power.

The presence (irrespective of expansion) of PanAmSat, other separate satellite systems, and fiber-optic cable do not clearly imply that their competition tightly constrains Intelsat and its Signatories. With respect to cable, intermodal competition is often weak because outside the US the same entity, usually the Intelsat Signatory, controls both cable and satellite, as well as connection to the public switched telephone network. In addition, some countries are not reached by cable, or do not have cost-effective cable connections (indirect connections). With respect to separate satellites, to a substantial extent, PanAmSat and other satellite systems serve different markets or are complements with, not substitutes for, Intelsat services. Similarly, local and regional satellite systems are specialized both as to geography and service, generally concentrating on video transmission or broadcasting. Intelsat, the only worldwide satellite system with universal access/landing rights, continues therefore to have competitive advantages.

¹⁰ Schwartz, "Whither Intelsat restructuring", page 1.

5. Intelsat and its Signatories Present Substantial Competitive Concerns.

Professor Schwartz greatly understates Intelsat's market power or, the other side of the coin, overstates the strength of the competitive constraints on Intelsat and on its Signatories. Professor Schwartz wrongly concludes, based on a simplistic theory that ignores all strategic interactions between Intelsat and its Signatories and other competitors, that Intelsat and its Signatories have no incentive to restrict entry and competition.¹¹ Professor Schwartz would have us believe that government-owned PTTs operate in an extreme world of perfect profit maximization, that their incentives are to cost minimize, and that the managers of these state-owned enterprises would use a competitor in order to save money; an odd description indeed of the typical PTT. In fact, as Professor Schwartz noted in his 1995 CEA paper, access to foreign markets through PTTs remains a significant barrier to competition in this market.¹² In addition, Professor Schwartz noted in that paper that the regulation of PTTs may well create incentives to circumvent regulation through activities in unregulated markets.¹³

Finally, whether or not there is some competition to Intelsat for some services in some markets, it is quite a stretch to say that there should be no concern with Intelsat and its Signatories because competition is increasing. More competition is better than less and actual competition is better than potential competition, particularly when the potential competition

¹¹ For instance, Professor Schwartz believes that the vertical relationships among PTTs/Intelsat Signatories and Intelsat are irrelevant to competition, for two reasons: (1) The governments not the PTTs control access, and (2) the governments have instruments other than Intelsat that could be used to extract monopoly profits, the pursuit of which is their only possible goal (other than cost-minimization). The first rationale is flawed in that it assumes both that the foreign government has no interest in excluding competitors and that the PTT is perfectly controlled to act as the government wishes. Both elements of this assumption are highly questionable. Governments may have an interest in excluding competitive firms, for instance, to protect local firms and minimize foreign influence in the telecommunications industries. It is, moreover, entirely inconsistent with both common sense and the modern economic theory of agency to assume perfect governmental control of complex, bureaucratic non-profit maximizing organizations like PTTs.

¹² CEA, page 4 "Denial of access on equal terms to national markets may well be the primary remaining barrier to entry for private satellite organizations. In general, a license is required for a satellite services provider to gain access (i.e. acquire landing rights for its signal) to a national market. In addition, to provide switched-voice telephone service, a potential competitor must also obtain access to the national public switched network (PSN), a network often controlled by the INTELSAT Signatory -- typically the dominant telecom provider."

¹³ CEA, page 4. "INTELSAT Signatories typically operate also in regulated markets where they are subject to constraints on profits, and may have incentives to circumvent such constraints by cross subsidizing their operations in unregulated markets (thereby shifting costs to the regulated markets and "justifying" higher rates there".

must enter a market in which there continues to be a threat of anticompetitive behavior by entities controlling bottleneck resources.

Contrary to Professor Schwartz, Intelsat and its Signatories may gain substantially by access restrictions that disadvantage separate satellite systems and other independent competitors. Professor Schwartz's analysis of Signatory and Intelsat incentives is static and ignores potential strategic effects on competitive entry and expansion. A rich and well known literature on the strategic use of investments, sunk costs, and capacity in horizontal and vertical relationships is not mentioned at all in his paper. This literature indicates that anticompetitive foreclosure can be both privately profitable and socially harmful.

Reasoning from the fact that most Signatories have small investment shares in Intelsat, Professor Schwartz derives from pure theory the proposition that Signatories are cost minimizers and always will use the lowest cost alternatives, even if that means allowing entry, bypass, and competition in their domestic monopoly markets. Professor Schwartz states that concerns regarding the behavior of the PTTs are unwarranted because Intelsat is a cost-sharing cooperative of its Signatories.¹⁴ His main argument appears to be that since a Signatory owns just $x\%$ of Intelsat, utilizing a cheaper alternative to save \$1.00 is in that Signatory's (say, X) interest. If X pays \$1.00 more to Intelsat for service it only receives its ownership share times \$1.00. *Ergo*, says Professor Schwartz, Intelsat must be a cost-minimizing cooperative. He seems to think that cost-sharing cooperatives exist by definition and are necessarily benign.¹⁵

¹⁴ Schwartz, "Whither Intelsat Restructuring" p 2.

¹⁵ Professor Schwartz uses the inappropriate economic theory of collusion among profit-maximizing firms to argue the impossibility of anti-competitive co-operation among Signatories and Intelsat. The Signatories and Intelsat, however, have long been part of a common enterprise, or club, and may retain a preference to deal with other members of the club. Further, as I detailed in my Reply Declaration, economic literature indicates that in circumstances such as those found here, access restrictions can harm competition. Firms with market power (the PTTs in this case) may have incentives to engage in anticompetitive vertical foreclosure. This body of literature suggests, contrary to Professor Schwartz, that a PTT has every incentive to foreclose competition or weaken potential entrants if it believes that a potential entrant can become an effective competitor on half-circuits to the PTTs own market and thereby provide end-to-end service. In addition, by foreclosing in the short run, a firm can have reputation and multi-market effects that deter entry and/or competition, thereby increasing its long run profits. Examples of such economic literature supporting such propositions include Williamson, Oliver E., *Assessing Vertical Market Restrictions: Antitrust Ramifications of the Transaction Cost Approach*, *University of Pennsylvania Law Review*, 127 (April 1979), pp. 953-993; reprinted in and cited from Williamson, Oliver E., *Antitrust Economics: Mergers, Contracting, and Strategic Behavior*, (Oxford: Blackball, 1987), p. 159. (Emphasis added.) On exclusionary contracts see, e.g., Aghion, Philippe and Patrick Bolton, *Contracts as a Barrier to Entry*, *American Economic Review*, Vol. 77, (1987), pp. 388-401; and Rasmusen, Eric B., et. al., *Naked Exclusion*, *American Economic Review*, Vol. 81 (5), (1991), pp. 1137-1145. There is, to be sure, a large literature efficiency explanations for exclusivity

Professor Schwartz, however, ignores the simple fact that there are large price-cost margins in international telecommunications services, and that it is in the interest of the Signatories, including Comsat, to maintain them.¹⁶ That is, the so-called co-operative can clearly have motivations to maintain or increase profits.

Professor Schwartz also asserts that Intelsat is benign, in part, because it is akin to a production joint venture that does not restrict its members actions in output markets. Unsubstantiated assertions do not advance the debate. Here, Professor Schwartz neither states the nature of this kinship, nor does he test any empirical hypothesis as to whether or not outputs are affected. In fact, much of his discussion goes to the absence of any profit sharing or constraining joint decision-making of the sort that might be expected to lead to maximal efficiencies.¹⁷

Below I use four empirical tests to examine Professor Schwartz's hypothesis that INTELSAT is purely a cost minimizing co-operative:

- ☐ does Intelsat's margin (revenue minus operating costs) change over time, as would be indicated in a competitive market ?
- ☐ do Signatories use of INTELSAT change over time, as it would in a competitive market?
- ☐ do Signatories' uses of Intelsat vary as competitive facilities roll-out?
- ☐ does Comsat's market value reflect market power ?

and foreclosure, e.g., Marvel, Howard B, Exclusive Dealing, *Journal of Law and Economics*, Vol. 25 (1), (April 1982), pp. 1-25.

¹⁶ In addition to the actual operations of Intelsat, economic theory shows that firms can gain from foreclosure when there are significant scale economies in the downstream market (here, satellite communication) by forcing entrants and competitors below minimum efficient scale. As I stated in my Reply Declaration: By steering traffic to the Intelsat System, they benefit Comsat (whether or not that is their intent or Comsats desire) and disadvantage competing systems, who thereby lose economies of scale and scope, and are deterred or slowed from entering new markets. This mechanism of competitive harm is carefully analyzed in Whinston, Michael, Tying, Foreclosure, and Exclusion, *American Economic Review*, Vol. 80 (1990), pp. 837-59.

¹⁷ In point of fact, production joint ventures are treated with suspicion under U.S. antitrust laws due to concerns regarding collusion and anticompetitive information sharing. *See, e.g.*, Shapiro, -Carl; Willig, -Robert-D., On the Antitrust Treatment of Production Joint Ventures, *Journal-of-Economic-Perspectives*; 4(3), Summer 1990, pages 113-30.

6. Intelsat's Financial Performance Indicates Constant or Increasing Market Power, Not Increasing Competition.

Professor Schwartz's theory of increasing competitive constraint is contradicted by the essential constancy of Intelsat's operating margin, *i.e.*, the percentage difference, on average, between prices and operating costs. Such margins are one potential measure of market power. Substantial increases in competition would be expected to decrease such margins, for example, when prices are reduced to meet competition. Constant or increasing margins are consistent with constant or increasing market power. Contrary to what would be expected if Professor Schwartz's theory were true, Intelsat's margins have, with some fluctuations, remained essentially constant from 1974-1996. Figure 1 shows the fluctuations in this indicator of possible market power, as well as the essentially flat linear trend line.¹⁸

7. The Signatories' Investments in Intelsat Indicate that They Do not Consistently Act to Choose the Lowest Cost Alternative.

Professor Schwartz's model also would predict that the appearance of a low-cost or high-quality competitive alternatives would decrease relevant Signatory use of Intelsat services. If Professor Schwartz's hypothesis were true and Intelsat were nothing more than a cost-minimizing consortium, the following also would be true:

- ⇒ Signatories' usage of Intelsat (*i.e.*, investment shares) should change over time, since countries have differing growth patterns, demand for telecommunications services, etc..
- ⇒ The investment shares of Signatories should change over time, because, as new efficient entrants arrive, they will be used by Signatories (*i.e.*, the launch of competitive satellites should alter usage of Intelsat).
- ⇒ As fiber cable expands, the pattern of each country's relative usage of Intelsat should vary significantly.

7.1 Variance in investment shares

Based on my own statistical analysis, Professor Schwartz's hypothesis simply does not withstand scrutiny. I begin by examining the change over time in Signatory ownership of

¹⁸ Although the line in Figure 1 shows a slight upward slope, the regression results in Exhibit 1 show that this slope is statistically insignificant, although, taken literally, the regression says that on average, Intelsat's operating margin has risen at about 5/100ths of a percentage point per year. This does not indicate increasing competition (see table 1).

INTELSAT. Contrary to Professor Schwartz's theory, numerous countries with widely varying economic and demographic circumstances have maintained their investments in Intelsat, and hence (at least until very recently) their use of Intelsat services at or near the minimum investment share of 0.05 percent. (See Table 2A). Under Schwartz's theory of flexibility and changing competitive and cost-minimization circumstances, it would be odd were many countries to increase their demand for Intelsat services at exactly Intelsat's rate of growth, as required for constant shares. Twenty two of the member countries with minimum shares as of March 1978, maintained shares at or near the minimum through May of 1997; 35 at the minimum in 1988 remained at or near that level through May, 1997; and in May, 1997, 52 members had maintained minimum or near-minimum shares since joining Intelsat.¹⁹

As the data in Table 2A indicates, these minimum-share countries were highly diverse. Although many are relatively less-developed, others, such as Costa Rica, Liechtenstein, Luxembourg, Monaco, Uruguay, and the Vatican, are included as well. The data in Table 2A shows that (for those countries for which we have data) the minimum-share countries range widely in economic and population growth and growth in telephone traffic.

The share patterns for countries above the Intelsat minimum for all or most of the 1978-1997 period also are inconsistent with Professor Schwartz's cost-minimizing hypothesis. Were Intelsat usage highly sensitive to economic conditions, one would expect substantial variation over time in any individual Signatory's share of Intelsat, as the conditions changed the member country's growth in demand for Intelsat services relative to the growth rate of Intelsat overall.²⁰

Contrary to the implications of Schwartz's theory, at least for a substantial number of countries, Intelsat investment shares have varied little over time: For 36 of 88 of these countries, the standard deviation of share over time was at or below 0.10 that is, one-tenth of one percent; an additional 21 had standard deviations below two-tenths of one percent; extremely low variation indeed. (Table 2B). For five countries, the coefficient of variation (standard deviation as a percent of the average) was below 10%; and for 28 of 88 the coefficient of variation was below 25%. These numbers reflect a low degree of sensitivity of Intelsat ownership shares to changes in economic conditions.

These results are inconsistent with Intelsat being merely a cost sharing co-operative.

As Professor Schwartz points out, new facilities—fiber optic cable and other satellite systems have emerged over the years. But, as was shown above, both the annual margin for Intelsat

¹⁹ To be sure several of these countries had been members for only a few years. Three joined between April, 1996 and May, 1997; and 21 between March, 1988 and May 1997.

²⁰ Constant shares indicate growth in usage equal to the overall growth in Intelsat investment and utilization.

and relative investment shares have been surprisingly constant. How has the use of Intelsat varied by countries as these new facilities came on stream? In Appendix 1, I provide a detailed statistical examination of the impact of the emergence of a new fiber optic cable facility or the launch of competitive satellites by PanAmSat, Orion, Rimshot and Columbia on a country's Intelsat investment share. All 74 members of Intelsat outside the US who had more than the minimum 0.05% share are so examined.

The results of the statistical analysis explain 71% of the variance in Intelsat investment across countries. The larger the country in terms of population or GNP, the larger the investment in Intelsat. Likewise, the greater the number of outgoing minutes, the larger the investment in Intelsat. That is, a country's use of Intelsat is conditioned by general economics. Two additional explanatory variables are included to examine how a country's use of Intelsat varies with increased facilities options--FOC, which represents the spread of fiber optic cable; and ALLSAT, representing increases in competing satellite capacity. The results are striking: while the spread of fiber optic cable does serve to reduce a country's investment in Intelsat, presumably by the PTT's switching PSTN traffic to cable, there is no similar impact of competing satellite capacity. That is, the spread of satellite capacity competing with Intelsat has, contrary to the assumption of Professor Schwartz, not resulted in significant less usage of Intelsat.

8. Comsat Stock Price Performance and Events affecting Market Competition.

One often-used method of examining the effects of events on a company is to trace the effects on its share price performance. Intelsat is not publicly traded and hence we cannot so examine it. However, Comsat is publicly traded, and given that it derives the vast majority of its revenue from Intelsat activities, as well as the fact that it is Intelsat's largest investment shareholder, Comsat's stock prices can serve as an appropriate proxy for Intelsat's (non-existent) stock prices. In light of this, we considered several important identifiable events which Schwartz's analysis claims would have an impact on the competitive nature of Intelsat's markets, and look to see if and how these events impact Comsat's share price. The events we considered included:

- * various announcements of launches of PanAmSat satellites, and an unexpected launch failure
- * various WTO/GATS events, including the initial anticipated failure of the telecom agreement, and later its successful conclusion
- * the PanAmSat—Hughes Communications (Galaxy services division) merger.

The details are given in Appendix 2. The conclusions are unmistakable: PanAmSat entry or launches have no effect on Comsat's share price, but WTO/GATS events do significantly impact Comsat's market value, with a successful agreement diminishing its value. These results are consistent with the other empirical analyses undertaken above and with Comsat—*i.e.*, Intelsat—having market power. First, if the successful conclusion of the WTO telecoms agreement signals increased market access worldwide, why does Comsat's market value fall, when a competitive firm would welcome the prospect of increased access in the future? Second, irrespective of Professor Schwartz's hypothesis that cost-minimizing signatories would use competitive satellite facilities, the various launches of PanAmSat apparently were deemed to pose no such threat to Comsat's revenues or earnings. Similarly is the case with the PanAmSat-Hughes merger, which in response to no consistent pattern in Comsat share price activity can be found. In short, investors and the market assumed the opposite of Professor Schwartz's hypothesis.

9. Conclusion

Examination of theory and facts raises significant issues with the operations of Intelsat and show that the naïve view that it is simply a benign cost sharing co-operative is unsupported. Hence, reclassification of Comsat as a non-dominant carrier raises substantial competitive concerns, notwithstanding Professor Schwartz's theoretical, but largely unsubstantiated, hypothesis. These concerns stem from the competitive position of Intelsat, and from the exclusive vertical relationships between Intelsat and its Signatories, of which Comsat is the largest. Professor Schwartz has added neither theoretical insight nor empirical information to alter that conclusion.

Table 1**Intelsat Operating Revenues, Expenses and Margins, 1974-1996**

Year	Operating Revenues (million USD)	Operating Expenses ¹ (million USD)	Operating Margin (percent)
1974	101	57	43.6%
1975	118	65	44.9%
1976	143	82	42.7%
1977	157	88	43.9%
1978	186	105	43.5%
1979	195	99	49.2%
1980	216	102	52.8%
1981	249	131	47.4%
1982	315	155	50.8%
1983	366	177	51.6%
1984	411	203	50.6%
1985	457	233	49.0%
1986	488	281	42.4%
1987	519	323	37.8%
1988	614	NA	
1989	614	NA	
1990	485.9	272.9	43.8%
1991	557.5	280.2	49.7%
1992	616.3	311.8	49.4%
1993	658.2	328.3	50.1%
1994	706.3	401.4	43.2%
1995	805.4	438.1	45.6%
1996	911.4	477.4	47.6%

1. These expenses include actual operating expenses and repayments of capital depreciation and are thus higher than conventionally defined operating expenses.

Source: Intelsat Annual Reports, 1978-1996

Chart 1
INTELSAT's Operating Margin (1974 -- 1996)

